Towards a shared framework?

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(E. Orr, C. Nyle)
The Framework
(Cambridge Mathematics quote, my addition in italics)

What it is
“a coherent and flexible presentation of the mathematics with which students aged 5 to 19 could be reasonably expected to engage”

What it does
• Maps domain knowledge
• Organises progressions in concepts and skills
• Provides anchors for linking domain knowledge to implementation”
Mathematics education vs Medicine

- Primitive: herbs; experience/tradition; magic/God
- Pseudo-science: ‘models’, but no method/check
- Greek/Renaissance: “Go look/think for yourself” (Hippocrates; Galen; Vesalius, Harvey, …)
- Practitioners (barber-surgeons) vs ‘professionals’
- Towards a Scientific Method (Edward Jenner, John Snow, Florence Nightingale, Louis Pasteur,…)
- “Modern medicine”
“Whose curriculum is it anyway?”

The question:

• denies absolutes: “elem\(^{y}\) maths = indep of culture”
• rejects the only path to gradual improvement (through respecting, reflecting on, learning from, and improving on past experience)

Convenient for advocating one’s preferred ‘model’

• first to insist on the right to one’s own place in the sun
• then to re-define oneself to be the “Good Guy”, and everyone else to be (more-or-less) “Baddies” (of different alleged persuasions)

Who gains?
The Magical Mystery Tour ...
Is coming to take you away ...
They’ve got everything you need ...
Satisfaction guaranteed.
Choose: t***s; or t***s; or T***S (+ ...);

- National Curriculum uses the F-word (x24; M-word x0): represented by some as too specific/narrow
- Singapore/Shanghai/... focus attention on long-term teaching; but “M*****” never clarified
- Re-interpreted as something less specific → slogan
- Gets confused with an amalgam of:
  (a) a diet of “rich” t***s (disjointed, non-cumulative)
  (b) “Big Ideas” (appealing to many, but no meaning)
  (c) shallow behaviourist brainwashing + t***s (Skinner, Bloom: dice/test/reward = “tick off sublevels”. Doesn’t work)
Look for an alternative to: Big-enders and Little-enders, Cowboys and Indians, “Us” and “Them”

- Reject crude dichotomies (progressive-conservative, etc), grotesque caricatures, and half-baked slogans
- Recognise: **effective** systems build on **consensus** + analysis

Then look to see

- to what extent **elementary maths** makes **consensus** easy;
- and where there is genuine scope for disagreement.

Then

- identify the effective alternatives; explore; make choices
Towards an alternative?

• Cannot pre-empt the path to consensus; so be tentative
• Lay aside personal preferences; focus on the **goal** = independent young adults within society
• Be pragmatic: distinguish a small number of pathways - shared up to a point, then diverging (to reflect goals)
• My reading of the evidence (first three phases):
  - **EY**: physical, social and linguistic preparation for **KS1**
  - **KS1/2**: language, seeing / doing / drawing / making, number / measurements – from Concrete to **Abstract**
  - **KS3A/B**: (**A**: consolidating **KS1/2** and leading to “**Voc**
    **B**: building on **KS1/2** to GCSE+)
Towards a consensus: Details → universal T***S?

- **Concrete-Abstract**: Sort out why KS1/2 “Abs” is “for all”
- **Vocational/Academic**: prepare all for choice (at 13-15?)
- **EY**: Try to agree goals; pros/cons of “formal work”
- **KS1/2**: Try to agree on “together” vs “group/individual” (“together/group” → class-teaching + intervention; “individual” → less class-teaching + out of phase)
- Postpone details of “language, doing/drawing/making” until endpoints agreed for KS1/2
- “Number/measurement”: Sort out essential ingredients + endpoints, and how these are effectively taught to all
- **KS3A/B**: A – our experience is limited (learn from others);
  B – fairly clear (nags, fracs, propn, alg, func, geom?, prob/stats)